

ATTORNEY DOCKET NO.:  
073671.0183

PATENT APPLICATION  
10/694,074

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of: Nathan R. Belk  
Serial No.: 10/694,074  
Filing Date: October 27, 2003  
Art Unit: 2622  
Confirmation No.: 3795  
Examiner: Brian P. Yenke  
Title: *AN INTEGRATED CHANNEL FILTER  
AND METHOD OF OPERATION*

**Mail Stop Amendment**

Commissioner of Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

**Declaration of Nathan R. Belk**  
**Submitted Under 37 C.F.R. §1.131**

I, Nathan R. Belk, hereby declare and state that:

1. I am the inventor of the subject matter of the above-referenced application entitled, "An Integrated Channel Filter and Method of Operation," filed on October 27, 2003.
2. The invention that is the subject matter of the above-referenced application was conceived while working in Plano, Texas, prior to July 30, 2003. I assigned my rights in the patent application to my employer, Microtune, Inc. on October 24, 2003 ("Microtune").

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3. Prior to July 30, 2003, I prepared a brief description of the invention entitled, "An integrated narrow band tunable channel pre-select filter" as part of an invention disclosure form that is attached as Appendix A. The description includes an explanation of the subject matter of the invention. The invention disclosure form includes redacted dates of conception and of the signing of the form that are both prior to July 30, 2003. The subject matter of the invention was also implemented in at least one of Microtune's integrated circuit tuner products identified as the MT2060.

4. Prior to July 30, 2003, Microtune prepared a computerized layout of the components in the MT2060, including the subject matter of the invention. An example of the computerized layout for the MT2060 is attached as Appendix B.

5. On June 30, 2003, Microtune provided various data related to the computerized layout of the MT2060 to its manufacturer, IBM. The data that was provided included at least "layout data" and a "verification log." The "layout data" was provided in a .gds2 file and included the design data used by IBM to generate a photolithography mask for the MT2060. The "verification log" was provided in a .CDS.log file and included data verifying the appropriate correspondence between the layout data and the schematics of the MT2060. A "README" file was also included to explain the contents of the submission. An email from Microtune to IBM identifying these and other contents of the submission of the MT2060 layout data is attached as Appendix C. A company called Nova Marketing was also copied on this email. Nova Marketing is a sales representative for IBM. Pursuant to this submission, Microtune tasked IBM with preparing a photolithography mask and a wafer for the MT2060 integrated circuit tuner.

6. A particular milestone in the manufacturing process for MT2060 was when the layout data was "released to mask" (RTM). This means that after completing their own internal verification procedures of the data sent by Microtune, IBM initiated the process of creating a photolithography mask. An email from Nova Marketing to Microtune dated July 14, 2003, and attached as Appendix D, indicates that the layout data for the MT2060 was released to mask on July 10, 2003 and that the commit date for its completion was August 22, 2003. The commit

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date refers to the date by which IBM agreed to fabricate a wafer for the MT2060 using the photolithography mask and ship it. Each of these tasks were carried out by IBM in the United States of America and/or in a WTO member country.

7. ASE Korea provides assembly and testing for a range of customer-specific integrated circuits. After fabricating a wafer with the MT2060 integrated circuit tuner, IBM shipped the wafer to ASE Korea. Microtune had tasked ASE Korea to separate the wafer into individual units, and package each unit to have the appropriate interconnections. An email from ASE US to Microtune dated August 19, 2003, and attached as Appendix E, confirms receipt by ASE Korea of the documentation and wafer necessary for the packaging of the MT2060 units. ASE Korea was copied on this email. ASE Korea performed its tasks in a WTO member country.

8. On August 21, 2003, the packaged MT2060 units were shipped to Microtune in Plano, Texas by Federal Express. An email from ASE US to Microtune dated August 22, 2003, and attached as Appendix F, confirms the shipment and the shipping information.

9. On or before August 25, 2003, Microtune received the shipment of MT2060 units. An internal email at Microtune dated August 25, 2003, and attached as Appendix G, confirms the receipt of the MT2060 units and that the preliminary testing of the units (referred to as "binning") was commenced "right away."

10. From August 25, 2003 until at least September 12, 2003, Microtune engineering personnel tested the MT2060 and the subject matter of the invention embodied in the MT2060 units against the appropriate technical specifications. Microtune concluded that the invention worked for its intended purpose on or before September 12, 2003. Microtune tested the MT2060 in the United States of America.

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11. I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements, and the like so made, are punishable by fine or imprisonment, or both, under Section 1001, Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed this 30 day of March 2007.

  
Nathan R. Belk

# **APPENDIX A**

Microtune, Inc. -- Invention Disclosure Form

IDF # 03-03

**1. Description of Invention**

An integrated narrow band tunable channel pre-select filter

**2. Background of Invention**

Please provide a brief description of the background of the invention. Address any problems in prior systems or methods that motivated you to develop the invention.

Broad band tuners typically receive more than 100 channels from which only 1 needs to be fully processed.

All other channels present degrade the desired signal. Any circuits that can eliminate the undesired channels prior to significant electronic processing greatly enhances circuit performance.

**3. Summary of Invention**

Please briefly describe the invention and its operation. Please attach to this form any specifications, drawings, flow charts, or other materials that may assist in understanding and evaluating the invention.

Pre-select filter uses on chip and or off chip reactive components in conjunction with on chip tuning components to remove undesired channels prior to amplification or other electronic processing.

**4. Advantages of Invention**

Please discuss the advantages of the invention over prior systems or methods.

Previously all incoming channels were extensively amplified and processed at great cost in power and performance. The undesired channels were then removed for final signal recovery. With this invention only a small number of incoming signals need extensive on-chip processing and most unwanted signals are prevented from entering the integrated circuit where they may corrupt desired signals

# Microtune, Inc. -- Invention Disclosure Form

IDF # \_\_\_\_\_

## 1. Associated Products and Services

What current or future products and services may implement the invention?

Microtune's integrated circuit tuners

## 2. Related Events

To the best of your knowledge:

- (1) On what date did you first conceive your invention? September 20, 2002
- (2) Has a product or service incorporating the invention been used either within or outside the company? **No**
- (3) Has a product or service incorporating the invention been offered to any customers? **No**
- (4) Has the invention been disclosed outside the company? **No**
- (5) Does the invention relate to work performed or a product finished under a government contract? **No**

If your answer to any of the above questions is "Yes," please describe the surrounding circumstances (including any relevant dates).

## 3. Contact Information

Please provide the following information so that outside counsel may contact the inventors. Please list any additional inventors on an attached sheet.

Nathan R. Belk  
Inventor Name (print)972-673-1764  
Work Telephone Numbernathan.belk@microtune.com  
Email\_\_\_\_\_  
Inventor Name (print)\_\_\_\_\_  
Work Telephone Number\_\_\_\_\_  
Email\_\_\_\_\_  
Inventor Name (print)\_\_\_\_\_  
Work Telephone Number\_\_\_\_\_  
Email

## 4. Inventor Signatures

I submit this Invention Disclosure Form pursuant to my obligation to assign all rights in the invention to Company and for advice on the patentability of the invention. I have reviewed and understood the contents of this Invention Disclosure Statement Form. To the best of my knowledge, the information provided on this form is complete and accurate.

[Signature]  
Inventor Signature\_\_\_\_\_  
Inventor Signature\_\_\_\_\_  
Date\_\_\_\_\_  
Inventor Signature\_\_\_\_\_  
Date

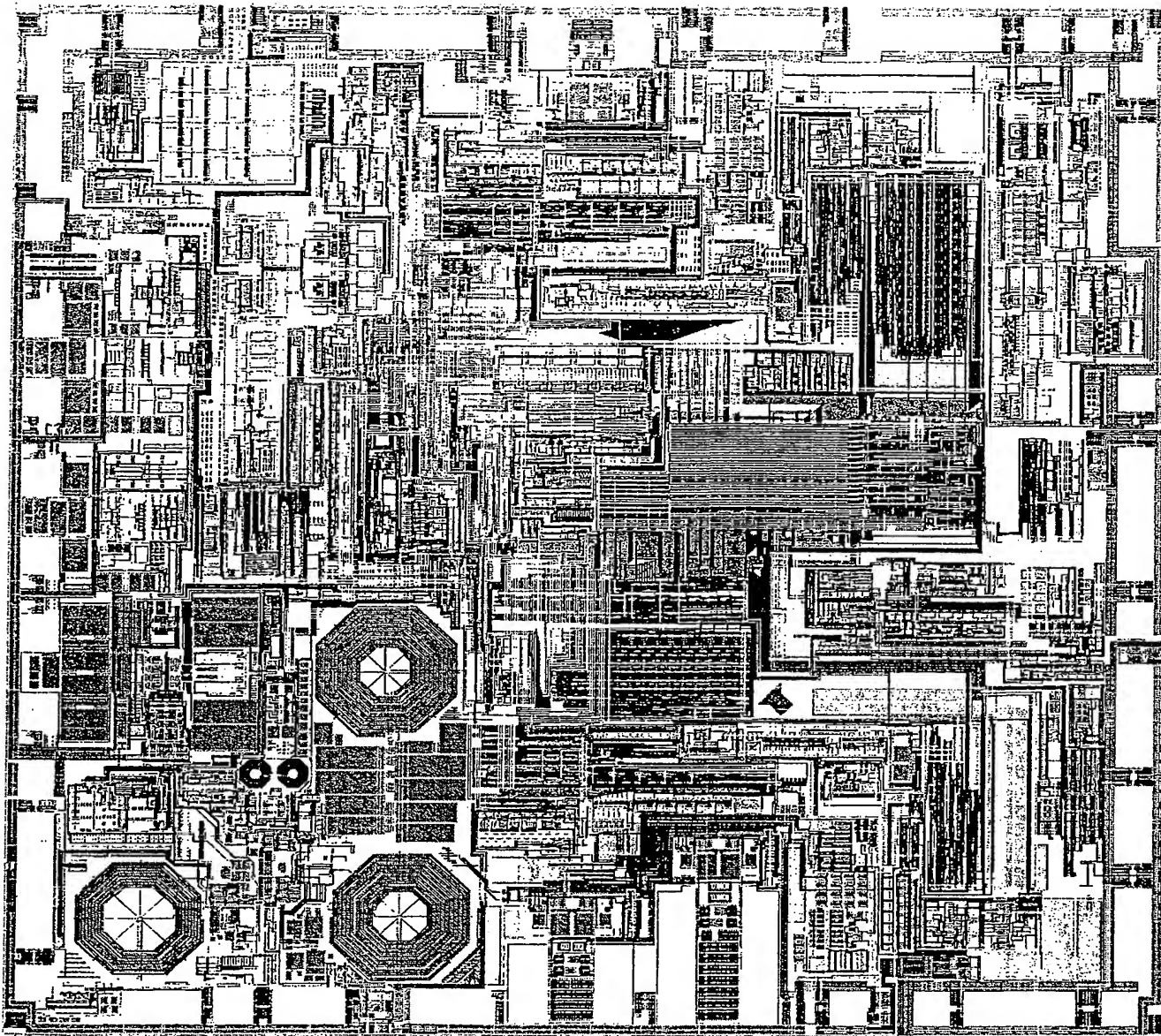
## 5. Witness Signatures

I have read and understood this Invention Disclosure Form, including any and all attachments.

[Signature]  
Witness Signature\_\_\_\_\_  
Date[Signature]  
Witness Signature\_\_\_\_\_  
Date

# **APPENDIX B**





MT2060 A0 Layout

# **APPENDIX C**

From: - Mon Jun 30 07:07:10 2003  
Received: from microtune.com [192. ] by microtune.com  
with SMTP (Microsoft Exchange Internet Mail Service Version 5.5.2653.13)  
id ; Fri, 27 Jun 2003 16:18:30 -0500  
Sender:   
Message-ID: <@microtune.com>  
Date: Fri, 27 Jun 2003 16:21:24 -0500  
From: <@microtune.com>  
X-Mailer: Mozilla 4.79 [en] (X11; U; SunOS 5.7 sun4u)  
X-Accept-Language: en  
MIME-Version: 1.0  
To: <@us.ibm.com>, <@us.ibm.com>, <@us.ibm.com>  
CC: <@novamkt.com>, <@microtune.com>, <@microtune.com>, <@microtune.com>, <@microtune.com>  
Subject: Microtune MT2060 A0 design database in dropbox  
Content-Type: multipart/mixed; boundary=  
X-Mozilla-Status: 0001  
X-Mozilla-Status2: 10000000  
X-UIDL: < >

All,

The MT2060 A0 database is in our dropbox on IBM's server.

Login:   
File Name: mt2060a0.gtar  
Time Stamp: 06/27/2003 17:20  
File Size:   
Prime Cell Name: (See attached README file.)  
Version of the Data: A0  
Technology: BiCMOS  
Design Kit Version: < >

Attached is the README file that is included in the GTAR archive, which explains the contents of the archive. The archive contains the verification output and the design data.

If there are any questions or problems, please let me know.

Regards,

Microtune, Inc.

--  
| [REDACTED] Layout Design Manager |  
| Microtune (972)673-[REDACTED] |  
README file for Microtune's [REDACTED] MT2060 A0 tapeout data.

The contents of this gtar file are:

README  
mt2060a0.CDS.log  
mt2060a0.PIPOstrmout.LOG  
mt2060a0.gds2

This file  
Verification logs for mt2060a0 die  
Stream out log file for mt2060a0 die  
Stream file; prime cell mt2060a0

Notes:

The individual die verification log files have sections with results of the following checks for each chip:

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED] errors are due to some custom devices we have made, the same that have existed on several previous Microtune devices. Microtune assumes full responsibility for performance risk for these custom devices.

[REDACTED] violations are for a design rule that  
does not apply, [REDACTED]

# **APPENDIX D**

From: [REDACTED] [mailto:[REDACTED]@novamkt.com]  
Sent: Monday, July 14, 2003 10:01 AM  
To: '[REDACTED]'  
Subject: MT2060 & [REDACTED] Status

Hi [REDACTED],  
Both [REDACTED] & MT2060 were RTM on 7/10 and the commit date for both is 8/22/03.

[REDACTED]  
Nova Marketing  
214-570-[REDACTED]  
214-570-[REDACTED] fax

# **APPENDIX E**



Subject: Re: Assembly of the MT2060  
Date: Tue, 19 Aug 2003 20:33:32 -0500  
From: [REDACTED]@aseus.com>  
To: [REDACTED]@microtune.com>  
CC: [REDACTED]@microtune.com>, [REDACTED]  
[REDACTED]@microtune.com>, [REDACTED]@asekr.com>, [REDACTED]  
[REDACTED]@asekr.com>

Hi [REDACTED]

ASEKR has confirmed receipt of documentation and wafers. One wafer will be assembled [REDACTED]  
[REDACTED]

Best regards,  
[REDACTED]

[REDACTED]@microtune.com>\*

08/19/2003 03:39 PM

To: [REDACTED]@aseus.com>, [REDACTED]  
(E-mail)" [REDACTED]@asekr.com>  
cc: [REDACTED]@microtune.com>, [REDACTED]  
[REDACTED]@microtune.com>  
Subject: Assembly of the MT2060

[REDACTED]  
Please pull one wafer from lot MOD33S007J and assembly the die specified in the attached wafer map. Every [REDACTED] of die on the wafer is a [REDACTED] test chips and the die that I have specified gives me [REDACTED] of test chips. Please take special care to assemble the highlighted die. Attached are all of the documents needed to assemble the MT2060 and all documents are complete now. I have reviewed the bond diagram that is attached and it is correct for lead frame that does not have the added [REDACTED]  
If you have any question please let me know.

Regards,

[REDACTED]  
<[REDACTED]A001\_0.pdf>> <<Assembly Instruction Check List.doc>>  
<<MT2060\_A0\_marking\_inst.doc>> <<wafermap.bmp>> <<wafermap.jpg>>  
<<wafermap1.jpg>>

# **APPENDIX F**

Subject: FW: MT2060 Shipment  
Date: Fri, 22 Aug 2003 09:50:26 -0500  
From: [REDACTED]@microtune.com>  
To: [REDACTED]@microtune.com>

[REDACTED]  
The MT2060 has shipped and should be here on Monday.

Regards,  
[REDACTED]

-----Original Message-----

From: [REDACTED]@aseus.com]  
Sent: Friday, August 22, 2003 9:30 AM  
To: [REDACTED]  
Cc: [REDACTED]  
Subject: MT2060 Shipment

Hi [REDACTED]

MT2060 units were shipped to Microtune last night. Shipping information is as follows:

Quantity = [REDACTED]  
Fedex tracking no# is [REDACTED]

Please drop me a line when you receive the package.

Thanks!  
[REDACTED]

# **APPENDIX G**

Subject: MT2060

Date: Mon, 25 Aug 2003 09:34:08 -0500

From: [REDACTED]@microtune.com>

To: [REDACTED]  
[REDACTED]@microtune.com>, [REDACTED]@microtune.com>,  
[REDACTED]@microtune.com>,  
[REDACTED]@microtune.com>,  
[REDACTED]@microtune.com>,  
[REDACTED]@microtune.com>

All,

the MT2060 is in-house. I'll start with the binning right away.

Best regards,

[REDACTED]

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[REDACTED]  
Microtune, Inc.  
2201 10th Street  
Plano, TX. 75074

Fon: 972.673. [REDACTED]  
Fax: 972.673. [REDACTED]